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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,430	07/25/2003	Harald Kaspar	57982US004	234I
32692	7590	08/09/2004	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427			HU, HENRY S	
			ART UNIT	PAPER NUMBER

1713

DATE MAILED: 08/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/627,430

Applicant(s)

KASPAR ET AL.

Examiner

Henry S. Hu

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*[Handwritten signature]*

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on IDS of 2-23-2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3 pages.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. It is noted that USPTO has received two IDS with a total of three pages filed on October 20, 2003 and February 23, 2004. **Claims 1-14 are pending now.** An action follows.

#### *Specification*

2. The disclosure is objected to because of the following informalities:
  - (a) On **page 10**, line 22, the chemical formula is improper. Three N atoms should be on the ring; otherwise it becomes amine-substituted ring compound.
  - (b) On **page 14**, line 17-18, all chemical recitations such as “di(trimethylsilyl)silylmethyl hydride” should be changed to “**bis**(trimethylsilyl)silylmethyl hydride” according to traditional wording. Please refer to Aldrich chemical catalog for the correct wordings.
  - (c) On **page 16**, line 13 and **page 17**, line 28, recitations of “APFO” and “APFOA” are not consistent. The examiner believes they are related to the same compound.
  - (d) On **page 17**, line 18 and **page 18**, lines 16 and 20, all three recitations of “**g/10**” may be improper. The examiner suggests a description of such a MFI unit being enclosed in the specification.

Appropriate corrections for (a) - (d) are required.

### ***Claim Objections***

3. Claim 3 is objected to because of the following informalities:

On **Claim 3** at line 2, recitation “upto” should be changed to “**up to**” according to traditional wording. Approximate correction is needed.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. *The limitation of parent **Claim 1** in present invention relates to fluoropolymer suitable for the preparation of a fluoroelastomer, said fluoropolymer comprising (a) 10-50 mole% of TFE,*

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*(b) 15-40 mole% of HFP, (c) 25-59 mole% of VDF, (d) 1-20 mole% of CTFE, and optionally (e) one or more fluorinated monomers other than above. See other limitations of dependent Claims 2-14.*

6. Claims 1-3 and 5-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Wlassics et al. (US 5,656,697).

Regarding the limitation of parent **Claim 1**, Wlassics et al. disclose that various copolymers including the claimed tetrapolymer of VDF/HFP/TFE/CTFE can be prepared. Some non-fluorinated monomers or cure site monomers may be also included for co-polymerization, for instance ethylene, propylene and bromine-containing monomers; such obtained copolymers are useful in making curable compositions (column 1, line 6-26; column 3, line 9-35).

7. Regarding **Claim 2**, Wlassics et al. disclose that perfluoro(alkyl vinyl ether) may be included (column 3, line 17-22).

Regarding **Claim 3**, cure site monomers as well as various co-monomers can be included as discussed in Claim 1.

Regarding **Claims 5-9 and 11**, Wlassics et al. have disclosed all the claimed limitations, please see peroxide-curable process by polyhydroxy/onium on column 1 at lines 33-67.

Regarding **Claim 10**, metallorganic hydrides having functional group of MH are included into the composition, wherein M is selected from Sn, Si, Ge, and Pb (column 2, line 1-28).

8. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Schlueter et al. (US 6,514,650 B1).

Regarding the limitation of parent **Claim 1**, **Schlueter et al.** disclose the preparation of a tetrapolymer from VDF, HFP, TFE and a cure site monomer, for instance such tetrapolymers are VITON GF, VITON-GH, VITON-E45 and VITON-B50 useful in a variety of applications in the electrostatographic or electrophotographic fields (column 4, line 40-45; column 1, line 9-12). Schlueter et al. further disclose that such perfluoroelastomers may comprise repeating units from chlorotrifluoroethylene (column 5, line 40-46).

9. Regarding **Claim 2**, perfluoro(alkyl vinyl ether) may be included (column 5, line 46-64).

Regarding **Claim 3**, cure site monomers as well as various co-monomers can be both included as discussed in Claim 1 (column 5, line 26-64).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 4 and 12-14 are rejected under 35 U.S.C. 103(a) as obvious over Wlassics et al. (US 5,656,697) or Schlueter et al. (US 6,514,650 B1), each individually in view of McCarthy et al. (US 5,955,556).

The above discussion of the disclosures of the prior art of Wlassics and Schlueter of this office action is incorporated here by reference. Regarding the limitation of **Claims 4 and 12-14**, Wlassics or Schlueter reference is **silent of specifically using a bimodal or multimodal fluoropolymer** (claim 4) as well as **polymer preparation involving surfactant free process** (Claims 12-14). McCarthy et al. teach that in the course of polymerization, surfactant is only added after the primary particles have already created or no surfactant is added at all, **polymers having bimodal distribution can be obtained** (column 7, line 67 – column 8, line 4; column 6, line 52-55; see working examples on column 11, line 6 – column 14, line 49). The

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advantage is such obtained specific polymers may contain a little or no surfactant with controllable particle number, size and distribution. Additionally, its dispersion may contain up to 50% solids content (column 1, line 9-18).

12. It is noted that all fluoropolymers made by Wlassics, McCarthy and Schlueter are applied for film coating and then curing. Therefore, one having ordinary skill in the art would have found it obvious to modifying Wlassics or Schlueter's polymer preparation by controlling the addition of surfactant as taught by McCarthy with an unique advantage as such obtained polymers from the modification of polymerization would have bimodal molecular weight distribution with its dispersion being as high as 50% solids content, a controllable particle number, size and distribution on polymers is thereby obtained. DW

### *Conclusion*

13. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a fluoropolymer comprising (a) 10-50 mole% of TFE, (b) 15-40 mole% of HFP, (c) 25-59 mole% of VDF, (d) 1-20 mole% of CTFE:

**US Patent No. 6,610,790 B2 to Hung et al.** disclose a fluoroelastomer composition having excellent processability and comprising a tetrapolymer of VDF/HFP/PVE/TFE in the peroxide cure system with polyhydroxy compounds (abstract, line 1-8; column 1, line 45 – column 2, line 4). However, chlorotrifluoroethylene is not included as a co-monomer



(column 4, line 51-62; column 1, line 51-54). Therefore, Hung fails to teach or fairly suggest the copolymers of present invention.


14. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Henry S. Hu

August 3, 2004

  
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